

**New species and new records of the genus  
*Anomotarus* Chaudoir, subgenus *Anomotarus* s. str.,  
from the Oriental and Australian regions.  
Supplement to the  
“Revisions of the species of the subgenus *Anomotarus* Chaudoir s. str.”**

(Coleoptera, Carabidae, Lebiinae)

**Martin Baehr**

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As a supplement to the revisions of the species of the genus *Anomotarus* Chaudoir s. str. from the Oriental and Papuan regions, and from Australia, four new species are described: *A. mourae* and *A. toombae* from Queensland, Australia, *A. jakli* from Tanimbar Islands, and *A. scriptus* from Thailand. Also new records of some rare or little known species are communicated. The new species are inserted in the most recent keys to the Oriental and Australian *Anomotarus*.

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### Introduction

While visiting recently a number of Australian collections and checking the unidentified carabid material, I sorted out specimens of a number of rare or undescribed species of the subgenus *Anomotarus* s. str. of the lebiine genus *Anomotarus* Chaudoir, 1875. They are communicated or described herein to receive a better idea of the taxonomic diversity and the distribution patterns within this subgenus. During a recent collecting trip through northern parts of Northern Territory and Western Australia I sampled material from certain species which are also communicated. Additional material of new or rare species was kindly submitted by S. Bílý (Praha), M. Häcker (Praha), E. Riley (College Station, Texas), and D. Wrase (Berlin). So the present paper is regarded as a supplement to my revisions of the Oriental-Papuan and the Australian species of the subgenus (Baehr 2004, 2006).

The genus *Anomotarus* Chaudoir belongs to the lebiine subtribe Calleidini and consists of more or less elongate, usually ground living carabid beetles which are characterized by more or less securiform labial palpi, rather projected eyes, usually rather swollen orbits, and denticulate tarsal claws. A number of Australian species, in particular those of the subgenera *Nototarus* Chaudoir, 1875, *Lithostrotus* Blackburn, 1894, *Amplitarus* Baehr, 2009, and *Rubritarus* Baehr, 2009 possess atrophied metathoracic wings, whereas most species of the subgenus *Anomotarus* s. str., except some montane Australian species, have well developed wings.

The subgenus *Anomotarus* s. str. is distributed from Pakistan in the north-west through southern and eastern mainland Asia to Japan, the Indonesian and Philippine insular belts including the Moluccas, New Guinea, the Bismarck Archipelago, Solomon Islands, New Caledonia and adjacent islands (Baehr 1996, 2004, 2005), and Australia (Baehr 2006), with

two Australian species introduced into New Zealand (Larochelle & Larivière 2007).

Baehr has revised the Oriental-Papuan and the Australian species in two papers (Baehr 2004, 2006), and the other subgenera which exclusively occur in Australia were revised recently (Baehr 2009).

From Australia, including adjacent Lord Howe and Norfolk Islands, at present 48 taxa of the nominate subgenus were recorded (Baehr 2006) that cover the whole of mainland Australia, whereas from Tasmania so far only a single species is known to occur. Species diversity is highest along the east coast and in tropical northern Australia, but a couple of species has managed to live even in semiarid areas in the interior.

So far 38 extra-Australian taxa have been recorded (Baehr 2004, 2005), of which 21 occur in the Oriental Region and 17 in New Guinea, the Bismarck Archipelago, Solomon Islands, and New Caledonia and surrounding islands.

Generally, very little has been recorded about habits and life histories of any species of the genus, because all species apparently are strictly nocturnal and thus, most specimens present in collections were sampled at light. The nocturnal habits are corroborated by the common observation that specimens of *Anomotarus* s. str. arrive at the lamp only in total darkness and rather late in the night. Therefore, any additional observations about habits and habitats are important for better understanding the biology of these beetles, and thus, even collecting circumstances of apparent fairly common species are communicated in the present paper.

## Methods

Examinations and descriptions follow the methods used in the revisions of the Oriental-Papuan and Australian *Anomotarus* s. str. (Baehr 2004, 2006). It should be mentioned again that body length was measured from apex of labrum to apex of elytra; length of orbit was taken from the posterior margin of the eye to the position where the orbital curvature meets the neck; length of pronotum was measured along midline, and width of base of pronotum at the position of the posterior lateral setae.

The habitus photographs were obtained with a digital camera using ProgRes CapturePro 2.6 and Auto-Montage and subsequently were edited with Corel Photo Paint 11.

The types of the new species are stored in Queensland Museum, Brisbane (QM), the private collection of D. Wrase, Berlin (CWB), and the working collection of the author in the Zoologische Staatssammlung, München (CBM), additional material is stored in the collections mentioned below under "Abbreviations".

In species described by earlier authors only the original citation and the citation in the revisions (Baehr 2004, 2006) are given. For full literature records see the revisions. Additional records of the common and widespread Oriental species *Anomotarus stigmula* (Chaudoir, 1852) and the widely distributed Australian species *Anomotarus crudelis* (Newman, 1840) are not communicated. Only if few specimens are recorded, their exact number is noted.

## Abbreviations of collections

AMS	Australian Museum, Sydney
CBM	Working collection M. Baehr in Zoologische Staatssammlung, München
CHP	Collection M. Häcker, Praha
CWB	Collection D. Wrase, Berlin
IRSNB	Institut Royal des Sciences Naturelles, Bruxelles
NTD	Northern Territory Museum and Art Gallery, Darwin
QDPIB	Queensland Department of Primary Industries, Brisbane
QM	Queensland Museum, Brisbane
TAMU	Texas A&M University Insect Collection, College Station, Texas
WADAK	Western Australian Department of Agriculture, Kununurra

## Abbreviations of states

NSW	New South Wales
NT	Northern Territory
QLD	Queensland
VIC	Victoria
WA	Western Australia

## The species

### *Anomotarus humeralis* Sloane

Sloane, 1917: 435. – Baehr 2006: 22.

**Distribution.** A fairly common species which is distributed through tropical northern Australia from north Queensland to north Western Australia.

**Collecting circumstances.** Most recently sampled specimens were collected at light near rivers or billabongs.

**New records:** NT: "NT9, Mary River NP, Mary River Billabong, 5 km nnw. Mary River Crossing, 12.53.49S, 131.38.33E, 28 m, 1.–2.11.2007, M. Baehr" (CBM); "NT19, 3 km e. Elsey Creek, Roper Bar Rd. 15.00.23S, 133.16.72E, 148 m, 5.–6.11.2007, M. Baehr" (CBM); "NT22, Roper River Crossing 3 km e. Roper Bar, 14.42.83S, 134.30.51E, 10 m, 6.–7.11.2007, M. Baehr" (CBM); "NT25, 5 km s. Larrimah, Stuart Hwy. 15.32.07S, 133.23.82E, 184 m, 7.–8.11.2007, M. Baehr" (CBM). – WA: "Kununurra, 22.12.1991–6.1.1992, R. I. Storey" (WADAK); "WA84, Ord River Crossing, 102 km nne. Halls Creek, 17.28.74S, 127.57.11E, 298 m, 26.–27.11.2007, M. Baehr" (CBM).

*Anomotarus r. ruficornis* Sloane

Sloane, 1917: 436. – Baehr 2006: 25.

**Distribution.** The nominate subspecies of this rather common species is distributed through tropical northern Australia from north Queensland to north Western Australia.

**Collecting circumstances.** The recently sampled specimens were collected at light near rivers or billabongs, the one from Howard Springs was sampled “in litter”.

**New records:** NT: “Howard Springs, 11.11.1979, M. B. Malipatil” (NTD); “NT13, Kakadu NP, South Alligator River Crossing at Old Jim Jim Rd. 13.02.95S, 132.19.13E, 43 m, 3.–4.11.2007, M. Baehr” (CBM); “NT29, 70 km n. Top Springs, Buntine Hwy. 16.00.94S, 131.56.33E, 253 m, 9.–10.11.2007, M. Baehr” (CBM).

*Anomotarus ruficornis plagiatus* Baehr

Baehr, 2006: 27.

**Distribution.** This southern subspecies is distributed in the southern half of eastern Queensland and in north-eastern New South Wales.

**Collecting circumstances.** Most species were collected in pitfall traps on the ground, one in “dry hardwood”.

**New records:** NSW: “Bundjalung NP, near gravel quarry, 29.17.12S, 153.16.40E, 20 m, 4.2.–9.4.1993, M. Gray & G. Cassis” (AMS); “W. Pennant Hills, 4.1984, G. O’Reilly” (AMS); “Helensburgh, 7.12.1980” (AMS); “Buckenbrowra SF, 35.38.20S, 149.59.38E, 15.3.1999, L. Wilkie, R. Harris & H. Smith” (AMS); “Walcha Survey, Cooplacurripa, 31.34.35S, 151.49.37E, 1.1993, I. Oliver” (AMS).

*Anomotarus nitidior* Baehr

Baehr 2006: 29.

**Distribution.** A fairly rare species which is distributed in tropical northern Australia from the northern part of the Northern Territory to northern Western Australia.

**Collecting circumstances.** All specimens were probably collected at light, that from Little Pantan River immediately near a river bank.

**New records** (3 ex.): NT: “12 km E Wallera, 24.35S, 132.26E, 21.11.1975, G. Griffin” (NTD). – WA: “Kununurra, 22.12.1991–6.1.1992, R. I. Storey” (WADAK); “WA56, Little Pantan River Crossing, 56 km n. Halls Creek, 17.52.53S, 127.49.91E, 339 m, 17.–18.11.2007, M. Baehr” (CBM).

*Anomotarus micans* Baehr

Baehr 2006: 30.

**Distribution.** Apparently a fairly common species which is distributed through the tropical and subtropical northern half of Australia from mid eastern Queensland to north Western Australia.

**Collecting circumstances.** All specimens were collected at light, mostly near rivers or billabongs.

**New records:** QLD: “Ayr, 8.XI.1990, W. F. Chamberlain” (CBM, TAMU); “Mossman, 11.XI.1990, W. F. Chamberlain” (TAMU). – NT: “NT19, 3 km e. Eley Creek, Roper Bar Rd. 15.00.23S, 133.16.72E, 148 m, 5.–6.11.2007, M. Baehr” (CBM); “NT22, Roper River Crossing, 3 km e. Roper Bar, 14.42.83S, 134.30.51E, 10 m, 6.–7.11.2007, M. Baehr” (CBM); “NT25, 5 km s. Larrimah, Stuart Hwy. 15.32.07S, 133.23.82E, 184 m, 7.–8.11.2007, M. Baehr” (CBM); “NT109, Kakadu NP, Jim Jim Billabong, 12 km sse. Cooinda, 12.56.26S, 132.33.10E, 16 m, 2.–3.12.2007, M. Baehr” (CBM); “NT114, Fogg Dam, 8 km ne. Humpty Doo, 12.33.44S, 131.17.86E, 23 m, 5.–6.12.2007, M. Baehr” (CBM).

*Anomotarus rufescens* Baehr

Baehr 2006: 32.

**Distribution.** A fairly rare species which is distributed through tropical northern Australia from north Queensland to north Western Australia.

**Collecting circumstances.** All specimens were collected at light, the one sampled by me near a small river in rather dense tropical woodland.

**New records** (3 ex.): NT: “NT19, 3 km e. Eley Creek, Roper Bar Rd. 15.00.23S, 133.16.72E, 148 m, 5.–6.11.2007, M. Baehr” (CBM); “Keep River NP, Jarnam, 15.46S, 129.05E, 23.4.1996, G. R. Brown” (NTD). – WA: “Kununurra, 22.12.1991–6.1.1992, R. I. Storey” (WADAK).

*Anomotarus fulgens* Baehr

Baehr 2006: 37.

**Distribution.** Apparently a rare species which is distributed from north Queensland to northern parts of Northern Territory.

**Collecting circumstances.** All recorded specimens were collected at light, those collected by me near a lagoon and a billabong.

**New records** (4 ex.): NT: “Smith Point, 1.8.1982, C. Wilson & S. Collins” (NTD); “NT5, Fogg Dam, 8 km ne. Humpty Doo, 12.33.44S, 131.17.86E, 23 m, 31.10.–1.11.2007, M. Baehr” (CBM); “Mary River NP, Mary River

Billabong, 5 km nnw. Mary River Crossing, 12.53.49S, 131.38.33E, 28 m, 1.-2.11.2007" (CBM); "Howard Springs, 18.XI.1990, W. F. Chamberlain" (TAMU).

#### *Anomotarus nubilus* Baehr

Baehr 2006: 46.

**Distribution.** A very rare species which is distributed from central western to south-western Western Australia.

**Collecting circumstances.** The single recorded specimen was sampled in a pitfall trap.

**New record** (1 ex.): WA: "46 km E Meentheena Out-camp 21°17'16.3"S, 120°53'29.4"E, NE07, 12.X.2004-10.V. 2005, CALM Pilbara Survey" (CBM).

#### *Anomotarus laticollis* Baehr

Baehr 2006: 57.

**Distribution.** A very rare, flightless, montane species which is only known from south-eastern New South Wales.

**Collecting circumstances.** Both recorded specimens most probably were collected in pitfall traps in closed forest.

**New records** (2 ex.): NSW: "Tuross River Rd. Bodalla SF, Site 3, 36.11.13S, 149.56.13E, 10.3.1999, L. Wilkie, R. Harris & H. Smith" (AMS); "Boundary Fire Trail, Monga SF, Site 1, 35.37.22S, 149.54.43E, 15.3.1999, L. Wilkie, R. Harris & H. Smith" (AMS).

#### *Anomotarus v. variegatus* Moore

Moore, 1967: 318. – Baehr 2006: 70.

**Distribution.** A moderately common species which is mainly distributed in north-eastern Queensland. The specimen from the north of Northern Territory is the second record outside of Queensland.

**Collecting circumstances.** Most specimens were collected at light.

**New records:** QLD: "Upper Jardine River, Cape York Pen. 11.17S, 142.35E, 20.10.1979, M.S. & B.J. Moulds" (AMS); "Lizard Is. NNE of Cooktown, 17.11.1974, M.S. & B.J. Moulds" (AMS); "Mission Beach, 12.XI.1990, W. F. Chamberlain" (TAMU); "Ayr, 8.XI.1990, W. F. Chamberlain" (TAMU). – NT: "Kakadu NP, Nourlangie Camp, 17.-18.11.1979, M. B. Malipatil" (NTD).

#### *Anomotarus latiplaga* Baehr

Baehr 2004: 39.

**Distribution.** This rare species is so far known from the eastern part of Java and from some of the Lesser Sunda Islands (Bali, Andonare). The new record corroborates the species from adjacent Lombok Island.

**Collecting circumstances.** Not recorded, but according to the collector probably sampled at light.

**New record** (1 ex.): "C. Indonesia, Less. Sunda isl. Lombok is., Lamaiera env., 100-500 m, XI-2006, S. Jakl" (CHP).

#### *Anomotarus flavus* Baehr

Baehr 2004: 48.

**Distribution.** This species is so far known from northern Thailand and from Laos. The new record is from within the recorded range.

**Collecting circumstances.** Not recorded.

**New record** (1 ex.): "NW-Thailand, Mae Hong Son pr.: Soppong-Pai, N:19°27', E:98°20', V-1996, J. Horák" (CHP).

#### *Anomotarus fuscipes* Darlington

Darlington, 1968: 190. – Baehr 2004: 55.

**Distribution.** This species is so far known from Papua New Guinea and eastern Papua Indonesia and it seems to be one of the commonest *Anomotarus* in New Guinea.

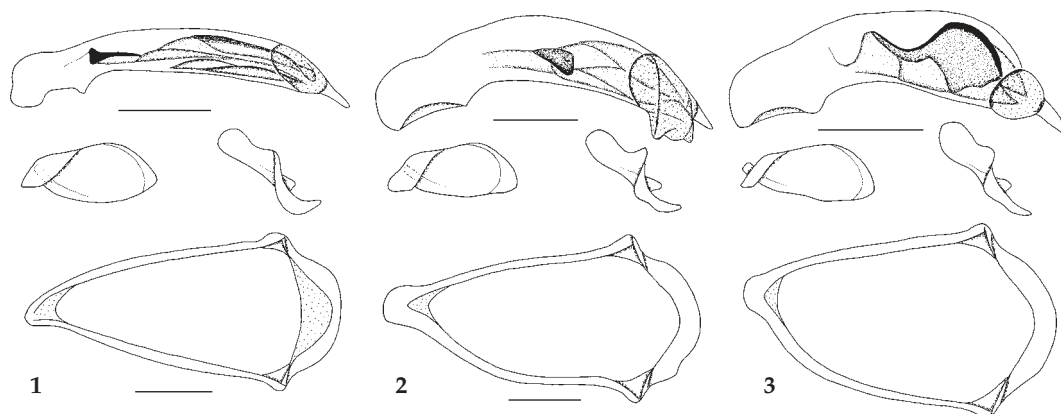
**Collecting circumstances.** All specimens were sampled at light, one "near river".

**New records:** "Papua New Guinea, Sisimangum village, Madang prov., I.G.: 26373, 1.VII.1981, Leg. J. Van Goethem" (IRSNB); "Papua New Guinea, Wau, Morobe prov., Wau Ecology Institute, 1200 m, I.G.: 26373, 20-21.VI.1981, Leg. J. Van Goethem" (IRSNB).

#### *Anomotarus jakli*, spec. nov.

Figs 1, 4

**Types.** Holotype: ♂, "INDONESIA Tanimbar Isles Yamdena Isle Lorulun vill. env. 20 km NE Saumlaki 150 m 25.XI.-24.XII.2006 St. Jakl" (CWB). – Paratype: 1 ♀, same data (CBM).



**Figs 1-3.** Male genitalia: aedeagus, parameres, and genital ring. 1. *Anomotarus jakli*, spec. nov. 2. *A. toombae*, spec. nov. 3. *A. mourae*, spec. nov. Scale bars: 0.25 mm.

**Etymology.** The name is a patronym in honour of the collector, Stanislav Jakl, Prague.

**Diagnosis.** The species is characterized by almost complete black colour with very indistinct traces of a small common sutural apical spot on the elytra, distinct microreticulation on the head, sericeous surface of the elytra, and pale reddish legs. It is distinguished from the most similar species *A. sericus* Andrewes, 1929 from the Greater Sunda Islands by wider pronotum with comparatively narrower base, and bright yellow lateral margin of the elytra.

### Description

**Measurements.** Length: 4.5–5.0 mm; width: 1.8–2.0 mm. Ratios. Length eye/orbit: 2.2–2.5; width/length of pronotum: 1.28–1.30; width widest diameter/base of pronotum: 1.37–1.38; width pronotum/head: 1.20–1.21; length/width of elytra: 1.40–1.42; width elytra/pronotum: 1.62–1.64.

**Colour (Fig. 4).** Upper and lower surfaces black, pale reddish lateral margins on pronotum narrow, on elytra conspicuous and wide. Apex of elytra with a small, very inconspicuous, pale sutural spot that covers the two median intervals. Apical margin of labrum and mandibles piceous, palpi, antenna, and legs pale reddish-brown.

**Head (Fig. 4).** Eye large, more than twice as long as orbit, though laterally but little protruded over the orbit. Orbit short, somewhat cheek-like, very convex, very rugose behind eye. Frontal ridge inside of eye distinct, attaining about the middle of the eye. Labial palpus in male moderately securiform, c. 2 × as long as wide at apex, in female narrower. Mentum with acute median tooth. Antenna short, just surpassing base of pronotum, median antennomeres < 1.5 × as long as wide. Upper surface with dense and very

distinct isodiametric microreticulation and anteriorly sparse, at summit more distinct punctures, towards neck also with short, rugose striae. Surface rather dull.

**Pronotum (Fig. 4).** Rather wide, cordiform. Apex gently concave, apical angle slightly protruded though widely rounded off. Lateral margins anteriorly very convex, in posterior half very little convex, almost straight, gently sinuate just in front of the small, though distinct, more or less acute basal angle. Base laterally excised and oblique, in middle much projected. Surface rather depressed. Median line shallow, in parts even superficial, anteriorly incomplete, near base impressed to a form a moderately deep furrow bearing sharp margins. Both transverse sulci shallow. Lateral margin narrow, little widened towards base, marginal channel moderately deep, margins distinctly upturned. Apex in middle not bordered, base bordered throughout. Anterior marginal seta situated at widest diameter, about at apical third, posterior marginal seta situated at basal angle. Surface with very sparse and extremely fine punctures and with many shallow, more or less superficial transverse furrows. Basal field with some stronger, very irregular furrows, surface of basal field very rough. Apical field with distinct isodiametric microreticulation and therefore dull. Disk with traces of extremely superficial, irregularly transverse microreticulation. Surface moderately glossy.

**Elytra (Fig. 4).** Rather short and wide, gently widened towards apex, comparatively depressed. Humerus projected but widely rounded, lateral margins gently but evenly convex. Apical margin barely excised, very slightly oblique. Lateral channel wide, depressed. Striae narrow, well impressed, not perceptibly punctate, intervals gently convex. Surface with remarkably sericeous lustre, caused



by the very dense, superficial, irregularly transverse microreticulation. Punctures on intervals sparse, difficult to detect. 3<sup>rd</sup> interval bipunctate, punctures situated near 2<sup>nd</sup> stria, the anterior one slightly in front of middle, the posterior one at apical quarter, difficult to detect, fixed setae very short. Surface with sparse, extremely short, erect pilosity which is only perceptible at high magnification and in lateral view.

Metathoracic wings. Fully developed.

Lower surface. Prosternum and abdomen with sparse and extremely short pilosity. Metepisternum elongate, c. 2 × as long as wide at apex. Terminal abdominal sternite in male 2-setose, in female 4-setose.

Legs. Of average size. Three basal tarsomeres of protarsus in male squamous, but little widened. Claws with 3–4 rather large teeth.

Male genitalia (Fig. 1). Rather large in comparison to body size. Genital ring narrow, triangular, slightly asymmetric, apex short and fairly narrow. Aedeagus narrow and very elongate, slightly asymmetric, in middle barely widened, orificium short, situated completely on the left side. Lower surface straight. Apex fairly elongate, rather wide, straight, situated on the right side. Internal sac with rather simple folding, with a narrow and elongate, moderately sclerotized plate in basal part. Parameres very dissimilar, asetose, left one large, wide, triangular, right one smaller but comparatively elongate.

Female genitalia. Very similar to those of *A. stigmula* (Chaudoir, 1852), as figured in Baehr (2004).

Variation. Apart from body size, slight differences present in the shape of the basal angle of the pronotum which may be more or less acute.

**Collecting circumstances.** Not recorded.

**Distribution.** Yamdena Island, Tanimbar Islands. Known only from type locality.

**Relationships.** According to body shape, colouration, surface structure, and shape of aedeagus this species is very similar and probably nearest related to *A. sericus* Andrewes from Malaysia and the Greater Sunda Islands.

### *Anomotarus scriptus*, spec. nov.

Fig. 5

**Types.** Holotype: ♀, "NW THAILAND, 1200 m Mae Hong Son pr. BAN SI LANG, 20.-22.V. Sv. Bily leg. 1996" (CBM).

**Etymology.** The name refers to the variegated colour pattern of the elytra.

**Diagnosis.** The species is well characterized by the variegate pattern of the elytra. It is distinguished from both most similar patterned species *A. humeratus* Baehr, 2004 from Sulawesi and *A. variegatus* Moore, 1967 from eastern Australia by the wide pale apical spot on the elytra which covers the whole apical margin, the wide pale margins of the pronotum, and the much more distinct microreticulation of the surface.

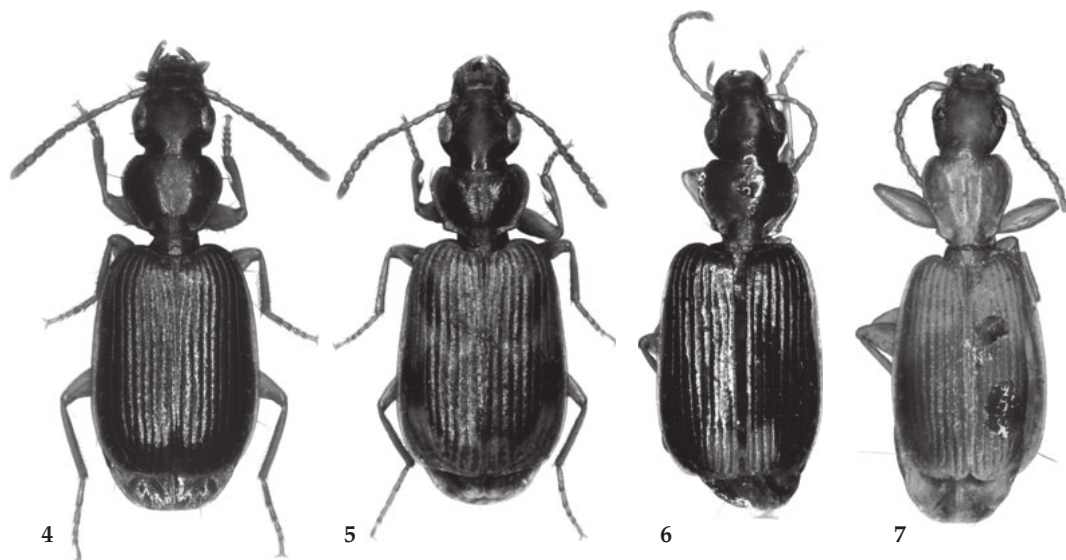
### Description

Measurements. Length: 4.7 mm; width: 1.95 mm. Ratios. Length eye/orbit: 2.3; width/length of pronotum: 1.35; width widest diameter/base of pronotum: 1.34; width pronotum/head: 1.17; length/width of elytra: 1.41; width elytra/pronotum: 1.74.

Colour (Fig. 5). Head and pronotum dark piceous to almost black, also dark elytral pattern nearly black. Clypeus, labrum, mandibles, and palpi reddish-piceous, antenna and legs pale reddish-brown. Apical margin, basal field, and the wide lateral margins of pronotum dirty yellow. Elytra largely dirty yellow with a large, anteriorly and posteriorly very serrate postmedian spot which laterally almost attains the lateral margin, in anterior half with two elongate, somewhat irregular dark spots that cover parts of the intervals 3 and 4 and 6 and 7. The complete base and apex widely pale, also most of the lateral margins rather widely pale. Lower surfaces of head and thorax black, but epipleura of pronotum and elytra contrastingly yellow, abdomen more or less dirty yellow to pale brown, somewhat irregularly mottled.

Head (Fig. 5). Eye large, more than twice as long as orbit, laterally slightly protruded over the orbit, but not interrupting the lateral curvature of the head. Orbit moderately short, evenly oblique-convex, not rugose. Frontal ridge inside of eye distinct, attaining almost the posterior border of the eye. Labial palpus in the female but slightly widened apicad. Mentum with acute median tooth. Antenna short, just attaining base of pronotum, median antennomeres little longer than wide. Upper surface with dense, regularly isodiametric microreticulation and very sparse, very inconspicuous punctures. Surface moderately dull.

Pronotum (Fig. 5). Wide, cordiform. Apex gently concave, apical angle slightly protruded though widely rounded off. Lateral margins anteriorly very convex, in posterior half very little convex, almost straight, gently sinuate just in front of the small, though distinct, about rectangular basal angle. Base laterally excised and oblique, in middle much projected. Surface comparatively convex. Median line shallow, anteriorly incomplete, near base im-



Figs 4-7. Habitus, body lengths in brackets. 4. *Anomotarus jakli*, spec. nov. (5.0 mm). 5. *A. scriptus*, spec. nov. (4.7 mm). 6. *A. toombae*, spec. nov. (5.1 mm). 7. *A. mourae*, spec. nov. (4.55 mm).

pressed to form a moderately deep furrow bearing sharp margins. Both transverse sulci shallow. Lateral margin wide, even slightly widened towards base, marginal channel moderately deep, margins distinctly upturned. Apex in middle not bordered, base coarsely bordered throughout. Anterior marginal seta situated at widest diameter, about at apical third, posterior marginal seta situated at basal angle. Surface with very sparse and extremely fine punctures and with many shallow, more or less superficial transverse furrows. Apical field with some stronger, irregularly longitudinal furrows, basal field and the wide lateral sulci irregularly punctate-rugose, these areas rather dull. Disk with fairly distinct, irregularly isodiametric to slightly transverse microreticulation, moderately glossy.

Elytra (Fig. 5). Rather short and wide, gently widened towards apex, comparatively depressed, but sutural area in posterior half slightly raised. Humerus projected but widely rounded, lateral margins gently convex but very feebly excised at basal third. Apical margin very slightly excised, slightly oblique, incurved towards suture. Lateral channel rather narrow, depressed. Striae narrow, well impressed, near base even slightly canaliculate, only near base finely but perceptibly punctate, intervals gently convex. Surface with some sericeous lustre, caused by the dense, moderately superficial, irregularly transverse microreticulation. Punctures sparse, difficult to detect. 3<sup>rd</sup> interval bipunctate, punctures situated near 2<sup>nd</sup> stria, the anterior one

slightly in front of middle, the posterior one at apical quarter, difficult to detect, fixed setae very short. Surface with sparse, extremely short, erect pilosity which is only perceptible at high magnification and in lateral view.

Metathoracic wings. Fully developed.

Lower surface. Prosternum and abdomen with sparse and extremely short pilosity. Metepisternum elongate, c. 2× as long as wide at apex. Terminal abdominal sternite in female 4-setose.

Legs. Of average size. Squamosity of male protarsus unknown. Claws with four rather large teeth.

Male genitalia. Unknown.

Female genitalia. Very similar to those of *A. stigmula* (Chaudoir), as figured in Baehr (2004).

Variation. Unknown.

**Collecting circumstances.** Not recorded. Holotype collected at rather high altitude.

**Distribution.** North-western Thailand. Known only from type locality.

**Relationships.** According to the colour pattern of the elytra this species seems to occupy a rather isolated position within the Oriental *Anomotarus*. The only comparably patterned species are *A. humeratus* Baehr from Sulawesi and *A. v. variegatus* Moore from eastern Australia, but, apart from differences in the elytral colour pattern, both species possess a completely black pronotum, and the microreticulation of

pronotum and elytra is far less distinct. Due to the unknown male genitalia of *A. scriptus*, its relationships remain obscure.

*Anomotarus toombae*, spec. nov.

Figs 2, 6

**Types.** Holotype: ♂, "QLD: 19°58.1'S×145°34.8'E "Toomba" site 1, 390 m 14–17 Dec 2006. Monteith & DJ Cook. faeces-baited pitfall.rainfor." (QMT165845).

**Etymology.** The name refers to the type locality of this species.

**Diagnosis.** The species is well characterized by the presence of a large apical sutural elytral spot, though absence of any humeral spot. It is distinguished from the most similarly patterned *A. plagifer* Darlington, 1968 from New Guinea by somewhat bronzed instead of bluish shine of the elytra, bright yellow lateral elytral margins, slightly smaller eye, narrower pronotum, and differently shaped and situated sclerotized plates in the internal sac of the aedeagus.

**Description**

Measurements. Length: 5.1 mm; width: 2.0 mm. Ratios. Length eye/orbit: 1.8; width/length of pronotum: 1.24; width widest diameter/base of pronotum: 1.40; width pronotum/head: 1.21; length/width of elytra: 1.47; width elytra/pronotum: 1.64.

Colour (Fig. 6). Upper and lower surfaces glossy black, but the elytra with some chaliceous to cupreous lustre, with distinct, yellow lateral borders and a large, rather well limited, yellow, common apical sutural spot that covers the three median intervals and parts of 4<sup>th</sup> interval. The posterior half of the marginal punctures of the elytra are also encircled yellow. Epipleuron of elytra contrastingly yellow. Labrum and mandibles piceous with reddish margins, palpi dark reddish with yellow apex, antenna pale reddish, legs dirty yellow.

Head (Fig. 6). Eye moderately large, less than twice as long as orbit, laterally slightly protruded over the orbit, but barely interrupting the lateral curvature of the head. Orbit moderately elongate, evenly oblique-convex, not rugose. Frontal ridge inside of eye distinct, slightly surpassing the middle of the eye. Labial palpus in the male moderately securiform, c. 1.5× as long as wide at apex. Mentum with acute median tooth. Antenna rather short, slightly surpassing base of pronotum, median antennomeres < 1.5× as long as wide. Upper surface with fine, somewhat superficial, regularly isodiametric microreticulation and sparse, inconspicuous punctures. Surface moderately glossy.

Pronotum (Fig. 6). Wide, cordiform. Apex gently concave, apical angles slightly protruded though widely rounded off. Lateral margins almost completely convex, sinuate just in front of the small, though distinct, more than rectangular, but laterally protruded basal angle. Base laterally excised, very oblique, in middle much projected. Surface comparatively depressed. Median line shallow, anteriorly incomplete, near base impressed to a form a moderately deep furrow bearing sharp margins. Both transverse sulci shallow. Lateral margin rather narrow, slightly widened towards base, marginal channel moderately deep, margins distinctly upturned. Apex in middle not bordered, base coarsely bordered throughout. Anterior marginal seta situated at widest diameter, behind apical third, posterior marginal seta situated at basal angle. Surface with very sparse and extremely fine punctures and with many shallow, superficial transverse furrows. Apical field with distinct, isodiametric microreticulation, rather dull, basal field with stronger, irregularly directed furrows and with distinct microreticulation, rugose and dull. Disk with finest traces only of irregular, transverse microreticulation, in parts even completely smooth, very glossy.

Elytra (Fig. 6). Comparatively elongate, very slightly widened towards apex, comparatively depressed. Humerus projected but widely rounded, lateral margins very slightly convex throughout. Apical margin very slightly excised, slightly oblique, incurved towards suture. Lateral channel rather narrow, depressed. Striae narrow, slightly impressed, near base even slightly canaliculate, not perceptibly punctate, intervals gently convex. Surface with finest and extremely superficial traces of irregularly transverse microreticulation, with conspicuous sericeous lustre. Punctures very sparse, difficult to detect. 3<sup>rd</sup> interval bipunctate, punctures situated near 2<sup>nd</sup> stria, the anterior one slightly in front of middle, the posterior one at apical quarter, difficult to detect, fixed setae very short. Surface apparently without erect pilosity.

Metathoracic wings. Fully developed.

Lower surface. Prosternum and abdomen with sparse and extremely short pilosity. Metepisternum elongate, > 2× as long as wide at apex. Terminal abdominal sternite in male 2-setose.

Legs. Of average size. Three basal tarsomeres of protarsus in male squamous, but little widened. Claws with four rather large teeth.

Male genitalia (Fig. 2). Moderately small in comparison to body size. Genital ring rather narrow, asymmetrically triangular, apex moderately short and rather wide. Aedeagus moderately stout, slightly asymmetric, in middle little widened, orificium short, situated completely on the left side. Lower



surface very gently concave. Apex short, rather wide, straight, situated on the right side. Internal sac with rather simple folding, with a small, moderately sclerotized plate in basal part. Parameres very dissimilar, aetose, left one large, wide, triangular, right one small and short.

Female genitalia, Unknown.

Variation. Unknown.

**Collecting circumstances.** The holotype was sampled in a pitfall trap baited with faeces in tropical rain forest.

**Distribution.** North-eastern Queensland. Known only from type locality.

**Relationships.** According to body shape and colour pattern of the elytra this species is most similar to *A. plagifer* Darlington from New Guinea, and it may be related to this latter species which has quite similarly shaped aedeagus, parameres, and genital ring, but different structure and location of the sclerotized plates in the internal sac.

*Anomotarus mourae*, spec. nov.

Figs 3, 7

**Types.** Holotype: ♂, "Rc ← Under Log H. 28.vi.67 C 202 / BRIGALOW DEVELOPMENT AREA MOURA. F.D. PAGE & L. RIGBY No. C. 4067 DEPT. PRIMARY INDUSTRIES, QLD." (QMT165846).

**Etymology.** The name refers to the type locality of this species.

**Diagnosis.** The species is characterized by reddish to pale brown colour with an indistinct darker cloud on the elytra, narrow head and prothorax, and small eyes. It is distinguished from the quite similar species *A. elliotti* Baehr, 2006 from central Northern Territory by lesser body size, smaller eye, slightly wider prothorax, and slightly longer elytra, and from *A. bogani* Baehr, 2006 from central New South Wales by more distinct dark cloud on the elytra, smaller eye, slightly narrower pronotum, a differently shaped sclerite in the internal sac of the aedeagus, and much wider genital ring.

**Description**

Measurements. Length: 4.55 mm; width: 1.65 mm. Ratios. Length eye/orbit: 1.12; width/length of pronotum: 1.03; width widest diameter/base of pronotum: 1.40; width pronotum/head: 1.21; length/width of elytra: 1.50; width elytra/pronotum: 1.67.

Colour (Fig. 7). Whole upper and lower surfaces, mouth parts, antenna, and legs pale reddish, but elytra with a large, ill delimited, brownish-piceous

cloud in the apical two thirds.

Head (Fig. 7). Narrow and elongate. Eye small, little longer than orbit, laterally very slightly projected over the orbit, but not interrupting the lateral curvature of the head. Orbit elongate, slightly oblique-convex, not rugose. Frontal ridge and sulcus inside of eye distinct, surpassing the posterior border of the eye, sulcus posterior of the eye slightly sulcate. Labial palpus in the male markedly securiform, little longer than wide at apex. Mentum with acute median tooth. Antenna short, just surpassing base of pronotum, median antennomeres c. 1.2 × as long as wide. Upper surface with rather superficial, irregularly isodiametric microreticulation and very sparse, inconspicuous punctures, rather glossy.

Pronotum (Fig. 7). Narrow, little wider than long, elongately cordiform. Apex gently concave, apical angles slightly protruded though widely rounded off. Lateral margins convex throughout, rather deeply sinuate in front of the angulate, well projected, but more than rectangular basal angle. Base laterally excised and very oblique, in middle much projected. Surface comparatively convex. Median line shallow, anteriorly incomplete, near base impressed to a form a moderately deep furrow bearing sharp margins. Both transverse sulci shallow. Lateral margin moderately wide, slightly widened towards base, marginal channel comparatively deep, margins distinctly upturned. Apex in middle not bordered, base coarsely bordered throughout. Anterior marginal seta situated at widest diameter, about at apical fourth, posterior marginal seta situated at basal angle. Surface with very sparse and extremely fine punctures and with many shallow, rather regular, more or less superficial transverse furrows. Apical field with some stronger, irregularly longitudinal furrows, basal field and the wide lateral sulci irregularly punctate-rugose, these areas rather dull. Disk with superficial, very irregular transverse lines, rather glossy.

Elytra (Fig. 7). Rather elongate, considerably widened towards apex, comparatively depressed. Humerus projected but widely rounded, lateral margins convex throughout. Apical margin evenly convex, incurved towards suture. Lateral channel rather narrow, depressed. Striae narrow, well impressed, not perceptibly punctate, intervals gently convex. Surface with some sericeous lustre, caused by the dense, but superficial, irregularly transverse microreticulation. Punctures sparse, difficult to detect. 3<sup>rd</sup> interval bipunctate, punctures situated near 2<sup>nd</sup> stria, the anterior one slightly in front of middle, the posterior one at apical quarter, difficult to detect, fixed setae very short. Surface with sparse, extremely short, erect pilosity which is only perceptible at high magnification and in lateral view.

Metathoracic wings. Fully developed.

Lower surface. Prosternum and abdomen with sparse and extremely short pilosity. Metepisternum elongate,  $>2\times$  as long as wide at apex. Terminal abdominal sternite in male 2-setose.

Legs. Of average size. Three basal tarsomeres of protarsus in male squamous, but little widened. Dentation of the claws unknown.

Male genitalia (Fig. 3). Rather small in comparison to body size. Genital ring remarkably wide, asymmetrically triangular, apex moderately wide, slightly asymmetric. Aedeagus short and compact, slightly asymmetric, in middle slightly widened, orificium short, situated completely on the left side, almost on lower half close to the lower surface. Lower surface in middle gently convex. Apex moderately elongate, rather narrow, straight, situated on the right side. Internal sac with rather simple folding, in middle with a large, irregularly triangular, strongly coiled, moderately sclerotized plate. Parameres very dissimilar, a-setose, left one large, rather wide, right one smaller, rather short, with comparatively wide apex.

Female genitalia. Unknown.

Variation. Unknown.

**Collecting circumstances.** The holotype was sampled under a log in Brigalow acacia bushland.

**Distribution.** Interior south-eastern Queensland. Known only from type locality.

**Relationships.** This species belongs to a group of narrow and elongate, usually brownish species, mostly from interior Australia, which are characterized by comparatively small eyes and large, convex orbits, and by a narrow prothorax. Within this group, *A. mourae* is most similar to *A. elliotti* Baehr from northern central Northern Territory and *A. bogani* Baehr from central New South Wales and probably it is related to both species.

### Recognition

*Anomotarus jakli* can be inserted into the key to the Oriental and New Guinean species of the genus *Anomotarus* Chaudoir (Baehr 2004: 29) either at couplet 5. when the indistinct traces of an apical sutural elytral spot are neglected, or at couplet 31. when the sutural spot is considered. References to figures of the revision are included in the key below with added "B04". Consequently, couplets 5. and 31. must be altered as follows:

5. Prothorax narrow,  $<1.15\times$  wider than long; elytra black or dark piceous without metallic lustre ..  
..... 6.
- Prothorax wider,  $>1.20\times$  wider than long; elytra dark aeneous ..... 5a.
- 5a. Prothorax narrower, ratio width/length  $<1.25$ , with relatively wider base, ratio widest diameter/base  $<1.32$ ; elytra without conspicuous pale margin (B04 fig. 57); aedeagus narrow and elongate, with relatively short apex, right paramere short (B04 fig. 23). Sumatra, Java, Borneo, Malaysia, southern Thailand .....  
..... *sericus* Andrewes, 1929
- Prothorax wider, ratio width/length  $>1.28$ , with relatively narrower base, ratio widest diameter/base  $>1.37$ ; elytra with conspicuous pale margin (Fig. 4); aedeagus similarly elongate, but apex longer and right paramere elongate (Fig. 1). Tanimbar Islands ..... *jakli*, spec. nov.
6. As in Baehr (2004).
31. Subapical sutural spot large and conspicuous, touching at suture (B04 fig. 55). Papua New Guinea ..... *plagifer* Darlington, 1968
- Subapical sutural spot small, inconspicuous, more or less separated at suture (B04 fig. 31) ..  
..... 31a.
- 31a. Surface piceous, elytra not sericeous, without conspicuous pale margins (B04 fig. 31); pronotum slightly narrower, ratio width/length  $<1.26$ , also narrower in relation to head, ratio width of pronotum/width of head  $<1.17$ ; usually also elytra shorter and wider. Sulawesi, ?Moluccas, ?Papua Indonesia .....  
..... *wallacei* Darlington, 1968
- Surface black, elytra sericeous, with conspicuous pale margins (Fig. 4); pronotum slightly wider, ratio width/length  $>1.28$ , also wider in relation to head, ratio width of pronotum/width of head  $>1.20$ ; usually also elytra longer and narrower. Tanimbar Islands ..... *jakli*, spec. nov.
32. As in Baehr (2004).

*Anomotarus scriptus* can be inserted into the key to the Oriental and New Guinean species of the genus *Anomotarus* Chaudoir (Baehr 2004: 29) at couplet 12. which must be changed as follows:

12. Elytra with markedly variegated dark pattern, whole base and apex widely pale (Fig. 5); pronotum with wide pale lateral margins. Thailand ..... *scriptus*, spec. nov.

- Elytral pattern not or far less variegated, apex at most with large pale spot at suture; pronotum without or with less wide pale lateral margins ..... 12a.

12a. Elytra without pale apical or subapical sutural spot ..... 13.

- Elytra with a pale apical or subapical sutural spot ..... 14.

*Anomotarus toombae* can be inserted into the key to the Australian species of the genus *Anomotarus* Chaudoir (Baehr 2006: 17) at couplet 12. which must be changed as follows:

12. Fully winged; elytra without humeral or post-humeral spot but with large and distinct apical sutural spot; colour glossy black, microreticulation on the elytra rather feeble. North Queensland ..... *toombae*, spec. nov.

- Elytra either not fully winged or with humeral or posthumeral and apical sutural spot or without both spots; colour various, microreticulation on the elytra various ..... 12a.

12a. Fully winged, elongate species with elongate metepisternum (c. 2 × as long as wide anteriorly), and with distinct light humeral or post-humeral spot of variable shape and a common apical spot ..... 13.

- **Either** not fully winged, wide species with shortened metepisternum (<1.5 × as long as wide anteriorly), or without distinct light humeral or posthumeral spot and common apical spot ..... 18.

13. As in Baehr (2006).

*Anomotarus mourae* can be inserted into the key to the Australian species of the genus *Anomotarus* Chaudoir (Baehr 2006: 17) at couplet 38. which must be changed as follows. References to figures of the revision are included in the key below with added “**B06**”.

38. Prothorax slightly longer than wide, by measurement (**B06** fig. 57); aedeagus unknown. n. NT ..... *elliotti* Baehr, 2006

- Prothorax slightly wider than long, by measurement (Fig. 7; **B06** figs 56, 58, 59); aedeagus see Fig. 3, **B06** fig. 17, or unknown. Distribution southern ..... 39.

39. Eye smaller, little longer than orbit, ratio length of eye/length of orbit c. 1.05; prothorax less cordiform, ratio widest diameter/base 1.32; elytra more conspicuously widened towards

apex; transverse band on elytra conspicuous (**B06** fig. 56); aedeagus unknown. s. VIC ..... *fasciatus* Baehr, 2006

- Eye larger, definitely longer than orbits, ratio length of eye/length of orbit >1.12; prothorax more cordiform, ratio widest diameter/base >1.40; elytra less markedly widened towards apex; transverse band on elytra less conspicuous (Fig. 7; **B06** figs 58, 59); aedeagus see Fig. 3, **B06** fig. 17, or unknown ..... 40.

40. Larger species, body length 5.6 mm; pronotum wide, markedly cordiform, ratio w/l 1.11; surface pale reddish with fairly distinct transverse band (**B06** fig. 58); aedeagus unknown. ne. NSW ..... *cordicollis* Baehr, 2006

- Smaller species, body length <5.1 mm; pronotum narrower, less cordiform, ratio w/l <1.06; surface reddish without or with indistinct transverse band or cloud (Fig. 7; **B06** fig. 59); aedeagus see Fig. 3, **B06** fig. 17 ..... 40a.

40a. Dark cloud on the elytra very inconspicuous (**B06** fig. 59); eye slightly larger, ratio length of eye/length of orbit >1.20; pronotum slightly wider in relation to head, ratio width of pronotum/width of head >1.23; aedeagus compact, with a convex-trapezoidal, sclerotized plate in middle of the internal sac, genital ring narrow and elongate (**B06** fig. 17). c. NSW ..... *bogani* Baehr, 2006

- Dark cloud on the elytra fairly distinct (Fig. 7); eye slightly smaller, ratio length of eye/length of orbit 1.12; pronotum slightly narrower in relation to head, ratio width of pronotum/width of head 1.21, aedeagus compact, with a coiled, about triangular, sclerotized plate in middle of the internal sac, genital ring remarkably wide (Fig. 3). ec. QLD ..... *mourae*, spec. nov.

### Remarks

The discovery of four additional new species demonstrates that the number of species of the subgenus *Anomotarus* s. str. neither in the Oriental Region, nor in Australia, is adequately known. Due to their ability for flight, species of *Anomotarus* have colonized even rather small islands in the southern Oriental Region, but apparently evolutionary processes proceed rapidly on such islands, because even single islands, or small islands groups, possess their own *Anomotarus* species (see Moore 1985, Baehr 2004). It is unknown, whether this is caused by the existence of but small populations, whether other processes are involved.

Similar patterns of distribution apparently exist in large parts of Australia, not only in the montane areas along the east coast, but also in the dry interior, where a couple of quite similar species exist most of which apparently possess rather restricted ranges. In some areas they occur together with species of the subgenus *Nototarus*, and possess similarly restricted ranges as most species of that subgenus, which are numerous in the arid parts of Australia (Baehr 2009). *A. mourae* belongs to this group of brownish, small eyed species that live in semiarid country.

The majority of the flightless *Nototarus* species, however, occurs in the western part of Australia, but most species of *Anomotarus* s. str. inhabit the tropical north and the fairly wet eastern and south-eastern margins of Australia. Even the mentioned dry country species of *Anomotarus* s. str. rather inhabit the southern and eastern parts of interior Australia, therefore common occurrence of species of both subgenera is fairly rare.

Most species of *Anomotarus* can be rather easily attributed to certain well characterized species groups (see Baehr 2004, 2006), but the new *A. scriptus* apparently is without any closely related species so far, which again demonstrates the inadequate knowledge about species inventory of the subgenus.

Ecology and ethology of the *Anomotarus* species are likewise inadequately known, because collecting circumstances either were not or little recorded, either specimens were collected at light traps, which sampling method does not give any indication to the ecological requirements of the sampled species. It is noteworthy that most specimens of the species sampled recently in northern Australia were collected near the banks or shores of rivers, billabongs, and lagoons. It is uncertain, however, whether this denotes a preference of the species for such environments, whether it is purely due to the preference of collectors for these environments.

Almost all species of *Anomotarus* s. str. which occur in the wet tropics of north Australia and along the east coast are dark coloured and usually possess a glossy, commonly sericeous surface. Usually they also possess rather large, laterally well produced eyes. In contrast to these species, most species that inhabit semiarid habitats in interior Australia are reddish to pale brown, possess a narrow pronotum and a narrow head, and relatively small eyes, and therein they resemble the majority of the dry country inhabiting species of the subgenus *Nototarus*. Although all species of both subgenera apparently are nocturnal animals, the different colourations and surface structures may be adaptations to the structure and colouration of the environments where the respective species live, and/or may represent examples of Gloger's rule.

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